

WEST

Generate Collection

L14: Entry 11 of 14

File: USPT

Aug 31, 1999

DOCUMENT-IDENTIFIER: US 5944769 A

TITLE: Interactive network directory service with integrated maps and directions

BSPR:

The present invention relates to directory services provided over a network, in particular the Internet.

BSPR:

The Internet is rapidly becoming a resource people turn to for a number of services. In particular, a number of business directory services have been established on the Internet, replacing the traditional business directories distributed by telephone companies. Such business directories allow a user to look up a particular business using the Internet.

BSPR:

In addition, other sites on the Internet provide map services for a variety of purposes. Some sites can simply store a large number of maps which the user can view. Other sites for a particular business or operation will often include a map showing their location. Some of these may provide directions to the location of the business in response to a user input.

BSPR:

In addition to the Internet, maps are now being provided in some cars, using, for example, global positioning satellites to determine a car's location. A user can input a query and receive directions from the user's location to a particular location to which the user wants to drive.

DRPR:

FIG. 8 is a block diagram of the Internet to which a central server system can attach to a user.

DEPR:

FIG. 1 is a block diagram of a system 10 according to the present invention. A user computer system 1 interfaces over an Internet link 14 to the software and database central server system 16 of the present invention. The databases include a geography or map database 18 and an associated business listing database 20. Specialty business listing databases may be added which include additional information, such as a real estate database 22 or an automotive database 24.

DEPR:

FIG. 8 is a block diagram of the Internet 130 to which a central server system 16 according to the present invention can attach to a user, such as user 1. In the example shown, a number of Internet provider networks 132 provide connection to local access providers 134, which then provide access to network service providers 136. The network service providers then connect to network access providers 138, which, in turn, are connected to the backbone service 140. It should be understood that other configurations of the Internet or other networks could be used with the present invention.

DEPR:

As will be understood by those of skill in the art, the present invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. For example, the present invention can be applied to a network other than the Internet, using protocols other than TCP/IP, such as an asynchronous transfer mode (ATM) protocol. Accordingly, the preceding description is intended to be illustrative, but not limiting, of the scope of the invention which is set forth in the following claims.

which is set forth in the following claims.

CLPR:

11. The system of claim 10 wherein said central server further comprises a database of real estate information.

CLPR:

12. The system of claim 11 wherein said central server further comprises a search module configured to search said database of real estate information for a particular location.

WEST

Generate Collection

L5: Entry 4 of 5

File: USPT

Sep 1, 1998

DOCUMENT-IDENTIFIER: US 5802492 A

TITLE: Computer aided routing and positioning system

BSPR:

Relatedly, there are a variety of mapping and positioning systems. One such system is a hand-held personal GPS navigation tool that has been developed by the Garmin Corporation of Lenexa, Kans. under the tradename Garmin GPS 45. The Garmin navigation tool incorporates a GPS receiver and a limited character display screen for displaying position information in alphanumeric and graphic characters. Another such system is a hand-held personal GPS navigation tool that has been developed by Trimble Navigation of Austin, Tex., under the trademark Scout GPS (TM). The Trimble navigation tool incorporates a GPS receiver and a four-line character display for displaying position information in alphanumeric characters. This hand-held GPS system can apparently display alphanumeric position information in a latitude/longitude coordinate system or a Universal Transverse Mercator (UTM) coordinate system. The Trimble navigation tool can apparently also display proprietary coordinate system information for locating the position of a user on a standard topographic map. The Trimble GPS navigation tool displays in alphanumeric characters the horizontal and vertical coordinate distances of the user from the southeast corner or southeast reference point of any standard topographic map.

BSPR:

A disadvantage of the Trimble GPS navigation tool is that it provides a display of coordinate system data only in alphanumeric characters on a multiline LCD display. The user must then perform mathematical measurements and operations to determine the user location on a particular topographic map. While the incorporation of GPS technology provides an improvement over dead reckoning and position estimation from topography, it necessarily requires user reference to quantitative measurements and calculations. Furthermore, the Trimble navigation device does not provide communications access to other geographical information databases for updated information on geographical objects in the spatial area of interest or communications access to other software tools for map analysis and reading. More generally, the Trimble navigation device does not provide a communications dimension for the map reading system.

BSPR:

According to the invention POI types of the CARPS database may be selected for example from the group consisting of restaurants, hotels/motels, cities, municipalities, settlements, routes, transportation services such as airports, ferries, and railroads, parks, recreation areas, campgrounds, hospitals, zoos, museums, tourist and sightseeing attractions, other geographical landmarks, etc. In a simplified example, the POI types can be limited to hotels, campgrounds, restaurants, and selected tourist attractions.

DEPR:

Alternative embodiments could include other input devices e.g. voice recognition system, joystick, touch-screen, scanner for printed map input, simplified keypad, etc., not represented here. FIG. 1A discloses CARPS 100 implemented on a single, stand-alone, desktop style, personal computer. The software technology, which facilitates interactivity between routing and multimedia, also works on a more portable laptop or notebook computer, a handheld personal digital assistant (PDA), embedded in a travel planning appliance or an in-vehicle navigation system, as well as on mainframes of various kinds, distributed work stations, or networked systems. Alternatively, users can also operate CARPS 100 from a remote interface through wireless or hard-wire links connecting with a distant computer

system or a central service bureau.

DEPR:

The user's choice of a particular location prompts a multimedia presentation 120 of information related to the selected place e.g. stills or video pictures of the lake, local events, places to stay or eat, attractions and recreational opportunities, related text or audio narrative, local history, lore, even complex or extensive data on topographic, environmental, demographic, real estate or marketing information, etc. The multimedia presentation is illustrated by the graphic image of a view of the lake, sailboat and mountains on the far shore, in the window 120, accompanied by related audio output 107 or 108. CARPS 100 enables a user to prompt a multimedia presentation 120 on a location 124, or group of locations, selected from within a digital or electronic mapping system 122, equipped to do routing functions and displays 123.

DEPR:

Based on user-optimized route computations, step 259 next expedites one or more computer displays, graphics, hardcopy, text, audio or other output, representing the initial route as computed along the waypoints input by the user. Such routes are represented as various forms of itinerary including: (1) annotated maps upon which the optimal routes are graphically marked, accentuated or highlighted; (2) lists of waypoints, or place names or geographic coordinates typically arranged in the order encountered along the route; (3) point to point directions how to take the optimal computed route indicating turning points, landmarks, navigation aids, signposts etc. along the computed route also typically arranged in temporal order of travel; (4) one or more POIs or preferably one or more ordered sets of waypoints or route nodes electronically uploaded into a compatible GPS receiver (interfacing with CARPS as detailed relative to FIG. 1A) for route guidance in the field; (5) various combinations of the four forms of route output or itinerary just listed.

DEPR:

In the simplified embodiment of CARPS the user can choose to browse one or more of the following lists: (1) Points of Interest, i.e., tourist or cultural attractions; (2) Hotels; (2) Campgrounds; and (3) Restaurants. Alternative embodiments incorporate a broader range of well-known techniques for storage, retrieval and correlation of geographic or cartographic data. For example, customer and sales prospect information can be stored in a relational database linking geographic locations with various personal, business and financial data. Such a database would be useful for diverse sales, service, delivery, property survey and security functions, particularly to prepare travel or route plans with multimedia digital photos of valued prospects or real estate. Utilizing such a relational customer database, sales force personnel can evaluate and locate prospects and established accounts needing a sales call, then extract the pertinent street addresses as waypoint input in order to prompt computation of an efficient, comprehensive route for making a round of sales calls.

DEPR:

Similarly, service and delivery personnel can plan their work for the day or the week on the road. Appropriate databases can help identify prime properties or security trouble spots. Real estate or security agents can input the street addresses or other location identifiers from the database in order to compose a waypoint list as input for the computation of an optimal route encompassing the properties of interest to the agents. With the waypoint list at step 411 and the background map display, alternate embodiments of the invention incorporate a variety of well-known databasing methodologies in order to enable the user to design, implement, output and further process diverse searches for waypoint input. In like fashion, waypoint lists can be memorized and recalled for later use or modification.

DEPR:

The present invention facilitates other forms and methods to attach information about locations. For example, to enhance a hardcopy travel plan for making sales calls on the road, step 459 facilitates attaching digital photos of sales prospects beside marginal notes detailing their name, personal interests and paste purchasing history. This located information aids the user not only to find sales prospects' locations but also to recognize the prospects' faces, remember names and create a more effective and personable impression. Similar attached photographic imagery proves useful with various travel plans: (1) photos of

landmarks as navigation aids; (2) digital pictures of drop-off sites, loading docks and other shipping terminal facilities to aid truckers and other delivery personnel; (3) images of industrial facilities, homes, buildings and land as seen from the road to enhance travel plans for real estate surveys, private security, public safety, et.; and (4) attached digital photos enhance scenic or sightseeing travel plans. FIG. 1N illustrates attached digital photos of people and property. Attached images of faces, places or other located content are not limited to still digital photo imagery except in hardcopy output. The system enables attachment of videos, extensive alphanumeric text or voice information about places or POIs, or situated music or natural sounds to map/route displays and electronic output.

DEPR:

But, POIs are not confined to tourist attractions and travel accommodations. Alternative embodiments of the present invention handle a great variety of public facilities or infrastructures as geographic point type POI data e.g. POLICE as shown on the 501 map display. Located or locatable objects in geographical space can also qualify as POIs e.g. THING at 505 on the map display shown at 501. THING might comprise a fixed landmark of human or natural origin. THING might also comprise a moveable object such as a vehicle, another item of personal property, a migratory animal or species, a person on foot, or other non-stationary phenomena as currently known, estimated, or predicted to be at a particular location. POIs can also include intended locations such as the proposed location of a building, a place to meet, or the site of a planned event. The term POI or point of interest lower case encompasses extensive types of geographical point data identified with or related to located or locatable objects which can be input, described, depicted and accounted for in a multimedia database.

DEPR:

For various alternate embodiments, in order to address marine, air flights, off-road, pedestrian or other forms of transport and travel, waypoints are structured according to the physical and mappable characteristics of those other ways of going places. For example, travel by air involves available airports, private planers and commercial lines, safe and customary flight paths, terrain obstacles, etc., which become factors or building blocks for appropriate air waypoint data structures. Travel on foot is also constrained by legal and safety issues exemplified by sidewalks and crosswalks as well as issues of customary paths or trails and natural terrain limitations plus artificial obstacles, etc. Subways, buses and other public ground transportation systems and public or private marine travel also require waypoint data structures appropriate to the mode of transportation, taking into account factors such as available stops, stations, terminals or docks, regular routes, connections and schedules, human or natural obstacles, safe navigation practices, etc. Ordinary CARPS and railroad travel are plainly confined to certain routes and tracks. Travel by air, foot and boat takes place in a more open spatial context still constrained, however, by customary or legal paths or channels and physical obstacles. In the FIG. 5 map display at 501, waypoints 510, 512 and 514 are structured as nodes coinciding with various intersections of ordinary automobile roads and highways.

DEPR:

Alternate embodiments of the present invention additionally facilitate editing and amendment of text attachments, attachment of selected visual images or audio output, and the insertion or input of new or supplemental multimedia located information through obvious, routine state of the art programming techniques for storage, retrieval and modification of multimedia data. For example, as detailed in relation to FIG. 4 and illustrated in FIG. 1N, embodiments for sales, real estate or security agents attach digital photo images, or even video clips, of particular properties or people at the appropriate locations on specialized travel plan outputs. Available technology further permits attachment of audio messages to travel plan output at relevant locations. Emergency or delivery personnel can recall and hear crucial client messages or instructions in relation to the known or estimated location of an emergency or delivery event. Relative to specific geographic locations, personal snapshots or video, voice/audio experiences recorded on tape or text recollections can be input, stored and recalled, utilizing the present invention as a digital travel album. Such diverse contents and media can be modified, revised and composed selectively together employing obvious, state of the art techniques for the computerized manipulation of interrelated text, graphic imagery or audio data.

CLPR:

11. The CARPS of claim 1 wherein said POIs are selected from a group consisting of restaurants, hotels/motels, cities, municipalities, settlements, routes, transportation services such as airports, ferries, and railroads, parks, recreation areas, campgrounds, hospitals, zoos, museums, tourist and sightseeing attractions, and other geographical landmarks.

CLPV:

CARPS software permitting user selection of selected waypoints that include at least a travel origin and a travel destination and can include intermediate waypoints, said CARPS software capable of determining intermediate waypoints between said travel origin and said travel destination, and of calculating, delineating, and displaying an optimized travel route between said travel origin and said travel destination via said intermediate waypoints according to user choice of (a) a shortest travel route, (b) a quickest travel route, or (c) a user-selected preferred travel route, said CARPS software also permitting user selection of a region of interest along said user-defined travel route, said region of interest having user-specified dimensions and permitting user selection of specified POI types selected from geographical landmarks within said region of interest and user selection of particular POIs from said selected types within said region of interest, said region of interest being identifiable in said computer by coordinate locations, of said geographical coordinate system, said CARPS software assembling routing data that includes said travel destination, said intermediate waypoints, said POIs, and said travel destination, said CARPS software permitting transfer of said routing data between a GPS device and said digital computer.

WEST

Generate Collection

L5: Entry 3 of 5

File: USPT

Aug 8, 2000

DOCUMENT-IDENTIFIER: US 6101534 A

TITLE: Interactive, remote, computer interface system

BSPR:

The present invention relates to an interactive, remote, computer interface system preferably used with a real estate display system structured to permit the remote exhibition of a real estate space, whether the real estate space is fully constructed or in a planning stage, and in a manner which gives a substantially realistic and comprehensive demonstration of the real estate space, either for prospective purchase purposes or for directional and guiding purposes.

BSPR:

Real estate sales and development is a multi-million dollar industry based on the impact and appealability of a particular real estate space to a prospective consumer. While in many circumstances, an actual real estate space which is being offered is physically available for a preferred, personal "walk-through" by a prospective purchaser or investor, sometimes such circumstances are not available or are not practical. For example, if a purchaser or investor is at a location remote from the precise real estate space, it may be inconvenient and time consuming for that individual to make a special trip just to view one or more specific real estate spaces. Along these lines, if a number of real estate spaces are to be viewed, a substantial amount of time is spent merely travelling from one location to another, and a viewer is never truly able to make a comparison while the images are fresh in his/her mind. Moreover, and perhaps of even more significant, especially in the field of real estate development, a particular real estate space may not be physically available for viewing because it is still under construction or is in the developmental stages. In such a circumstance, prospective purchasers or investors must rely on static artist sketches of a particular real estate space, or must view a similar real estate space. Unfortunately, these methods and existing systems do not truly provide a prospective purchaser or investor with a realistic perspective of a specific real estate space.

BSPR:

For example, even with existing video systems, a prospective purchaser or investor is not truly able to capture the feel of user controlled, independent movement from one room to another or of exploring the surrounding environment of the real estate space, such as examining a specific view from a window or balcony, and exploring options relating to elevation and orientation changes of a particular real estate space. As such, it would be highly beneficial to provide a system which can provide a prospective purchaser or investor a complete and highly realistic view of a specific real estate space, even when direct viewing of the real estate space is not available for any of a variety of reasons.

BSPR:

With the advent of technology, more and more individuals have sought to develop technical systems to provide some sort of representation of the view of real estate space. While a depiction of floor plans and artist drawings may sometimes be available, most systems which claim to be interactive merely provide a series of fixed dimension and orientation, static images strung together. Indeed, any systems which claim to provide a user with a "walk-through" type viewing environment are typically very limited in the views which they provide, are substantially erratic, as they do not seek to provide any image continuity beyond merely stringing static images together, and typically only provide a moving reference point for viewing the same image rather than providing a user with an actual feel for a specific real estate space. In fact, these systems are truly

linear displays of files on a video tape or laser disc, and provide no user interactivity, indeed, a user of conventional systems is merely permitted to "sit and watch" without control, beyond conventional forward, rewind and/or selection of a file to be displayed.

BSPR:

As such, it would be highly beneficial to provide a real estate display system which can provide a user with a highly interactive, first person perspective, "walk-through" type experience, giving the user complete freedom of mobility so as to turn around, look up, down or at any location desired, substantially giving that user the impression of an actual presence in the real estate space. Moreover, such a system should be capable of interlacing audio and video information regarding the specific real estate space, such as views from a balcony or a window, and/or presentations regarding options, such as different flooring or wall coverings, or other amenities so as to anticipate views a user at the actual space would normally seek to see, and indeed, providing some views and information which could not be as readily available in a standard, physical "walk-through".

BSPR:

In addition to the needs associated with the sale and demonstration of a specific real estate space to prospective purchasers, it is also seen that significant needs are associated with the requirements of individuals attempting to navigate large, complex real estate spaces, such as office buildings, cruise ships, collage campuses, recreational facilities, hospital facilities, convention centers and the like. In such circumstances, and often because of the generally limited display space available for directional/navigational information, individuals seeking to navigate a specific real estate space must generally rely upon two dimensional maps to provide some maneuvering guidance. Such maps, however, do not provide any true frame of reference for an individual attempting to navigate a specific area, such as by pointing out landmarks and generally providing an individual with the knowledge of "what they are looking for" as they actually proceed through the real estate space. Along these lines, it would be highly beneficial to have a system for the display of real estate space which can effectively and realistically guide an individual through a large complex real estate space, providing that individual with substantially realistic and accurate representations of what that individual will see as they seek to arrive from one location to another. Moreover, such a system should be capable of providing additional and immediate information regarding particular locations, sites, or points of interest along the way, thereby further assisting the individual in their navigation through the real estate space. Although a typical map display should also be available for such a system, it would be beneficial to provide some reference between that typical map display and an actual first person image of what will be seen as certain areas are navigated, allowing the user complete control and freedom of movement in order select a location to which they would seek to go and a manner in which they would like to arrive at that location, while still providing a complete and accurate representation of the navigation course. Unfortunately, the prior art is deficient in providing such a system capable of achieving such result and providing such effective information to an individual seeking to navigate or otherwise view a real estate space. Moreover, such system are pre-set in the guided path and do not let an individual explore and/or select their own path that guides them by other desired locations and can provide information regarding unfamiliar locations at the users option. Indeed, the system of the present invention uniquely seeks to provide an effective, accurate and easy to use solution to the problems which remain in the related art.

BSPR:

Furthermore, it is noted that with the advent of on-line technology, such as internet navigation, it is often desirous for various types of information, including real estate space display information, to be accessed through a remote on-line connection. Such types of connections are indeed quite valuable as they enable large quantities of information to be stored on dedicated remote server assemblies, permitting individuals, with perhaps less powerful computer systems to access the vast array of information. A significant problem associated with the use of such on-line technology, however, involves the substantial amount of time required to down-load various images and information. Such is particularly the case with any kind of animated three dimensional images or with video and/or audio information. Typically, the down-load time for such types of information is

in the range of many minutes, making any kind of seamless and/or continuous presentation of an animated nature substantially impossible. Indeed, even with the advent of broadband technology and higher speed computers, substantial limitations still exist with regard to the speed in which video and audio is provided in an accessible and effectively utilizable means for a person at a local access site. Accordingly, it would be highly beneficial to provide a system which

BSPR:

The present invention is directed towards a real estate display system for the remote exhibition of real estate space, such as for purposes of display and purchase, or for purposes of assisting navigation and/or demonstration of the physical space to one or more individuals. Specifically, the display system of the present invention includes a display assembly structured to visually display a three-dimensional image thereon, and having the capabilities to display continuous motion images such as video or continuous three dimensional graphics, audio and animated files.

BSPR:

Further, the display system of the present invention includes a data storage assembly. The data storage assembly is structured to store a quantity of data corresponding the plurality of three dimensional images which may be displayed on the display assembly. Of course, the plurality of three dimensional images are preferably directly associated with the real estate space to be displayed by the display system. To be used at least partially in conjunction with the data storage assembly, the display system also includes a data entry assembly. Specifically, the data entry assembly of the present display system is structured to at least partially input the quantity of data corresponding the three dimensional images into the data storage assembly.

BSPR:

The system of the present invention further includes a processor assembly, the processor assembly including preferably both an overlay processor and a direct view processor as a part thereof. In particular, the overlay processor is structured to generate a floor plan display of the three dimensional/real estate space. This floor plan display is generated from the quantity of data contained at least in part by the data storage assembly, with the floor plan display being structured for display on the display assembly in preferably complete form. Conversely, the direct view processor is structured to generate a three dimensional, walk-through display of the three dimensional space. The three dimensional walk through display is generated by the direct view processor from the quantity of data corresponding the plurality of three dimensional images and is structured to generate and provide a substantially realistic, first person illustration of the real estate space to be displayed on the display assembly. While both the three dimensional, walk-through display and the floor plan display may be shown on the display assembly at the same time, the display system preferably includes a display selection means. The display selection means are structured to selectively display the three dimensional display and/or the floor plan display on the display assembly according to the specific needs of the user. As such, the display selection means is structured to control the switching between displays, preferably at any time desired by the user.

BSPR:

In order to facilitate maneuvering and movement throughout one or more of the various displays, the present system further includes a reference beacon. The reference beacon is structured to be recognized by the processor assembly and to thereby direct the processor assembly to generate and display a particular portion of a selected one of the displays. That particular portion of the selected display is structured to specifically correspond a spacial position and spacial attitude of the reference beacon, thereby allowing control and modification of the spacial position and attitude of the reference beacon to likewise control the display generated for depiction on the display assembly. To assist this function, the present display system includes an attitude control assembly. The attitude control assembly is structured to selectively change the spacial attitude of the reference beacon generally along vertical and horizontal plains, thereby allowing a user to effectively "look" up and down, left and right, and/or any combination thereof. Similarly, a position control assembly is provided. The position control assembly is structured to selectively change the spacial position of the reference beacon relation to the portion of the display

being generated by the processor assembly and being shown on the display assembly. Such a position control assembly effectively provides for movement throughout a specific, select display being generated and shown. Along these lines, the processor assembly is specifically structured to substantially continuously and seamlessly modify the portion of the display being generated thereby and being displayed on the display assembly. These continuous modifications correspond those changes in the spacial position and spacial attitude of the reference beacon and thereby provide realistic transitions between the viewing of a particular area to the viewing of another particular area as directed by the user. Also, the processor assembly is structured to continuously correlate the spacial position of the reference beacon in the three dimensional walk-through display with its spacial position in the floor plan display, and vise-a-versa. As such, by coordinating the spacial positions with one another and also preferably by coordinating a horizontal spacial attitude, when the display selection means switch between the displays, the portion of the display being shown on the display assembly, whether the three dimensional, walk-through display or the floor plan display will always remain consistent. Such correlation allows effectively toggling between the various displays, and/or permits simultaneous illustration of both displays in order to provide a more effective overall picture of a specific real estate space being viewed thereby.

BSPR:

Additionally, the present invention relates to an interactive, remote computer interface system which enables the utilization of the real estate display system through an "online" medium. Preferably, the interface system of the present invention includes a remote server assembly which contains quantities of primary site data. Moreover, the remote server assembly also includes at least one primary site address in which at least a portion of the primary site data is stored. Preferably, that primary site address is distinct and unique, thereby identifying a particular location thereof on a computer network, and allowing remote access to that primary site address from another location.

BSPR:

Additionally, the interface system includes a local processor assembly, such as the processor assembly of the real estate display system. The local processor assembly and the remote server assembly are connected in data transmitting and receiving communication with one another, such as through a typical on-line connection. Moreover, the local processor assembly is structured to access the primary site address in order to achieve the data transmitting and receiving communication with the remote server assembly, and in particular, so as to be able to access the primary site data contained at the primary site address.

BSPR:

The local processor assembly further includes at least one data storage assembly associated therewith. While the data storage assembly may include only a fixed/hard drive of the local processor assembly, preferably the data storage assembly of the interface system includes at least one compact, portable and interchangeable computer readable medium. This interchangeable computer readable medium is structured to contain a quantity of auxiliary site data thereon, that auxiliary site data being associated with the primary site data. Furthermore, the interchangeable computer readable medium preferably includes a plurality of remotely accessible, auxiliary site addresses encoded therein. Each of the auxiliary site addresses includes a select portion of the quantity of auxiliary site data and is structured to be remotely accessed by the remote server assembly. The remote access by the remote server assembly is structured to initiate utilization of the select portions of the auxiliary site data by the local processor assembly, preferably in conjunction with the primary site data and in a manner which is continuous and well integrated. In this regard, and relating to the preferred embodiment wherein the local processor assembly is utilized as part of a real estate space display system, the auxiliary site data may include a plurality of operating instructions which will work in conjunction with a quantity of data, such as the auxiliary site data stored on the interchangeable computer readable medium or other stored data, in order to instruct the local processor assembly to generate various display images, such as a three dimensional display or overlay display. In this manner, a user at the local processor assembly need not wait for the downloading of substantial quantities of information and images in order to provide a substantially interactive, continuous and effective display on the display assembly associated therewith.

BSPR:

It is an object of the present invention to provide a display system capable of giving a user a true and complete perspective of a specific three dimensional space, such as a real estate space.

BSPR:

Yet another object of the present invention is to provide a display system capable of effectively and interactively guiding a user through a large real estate space, such as a cruise ship, a college campus, a factory, an office complex, a hospital, a recreational facility, and the like.

BSPR:

Still another object of the present invention is to provide a display system capable of guiding a user through a large real estate space in a manner which permits the user to define a desired path as they are being guided through the space, and which makes additional information regarding specific areas readily available to the user in an effective format such as full motion video.

BSPR:

An added object of the present invention is to provide a display system capable of permitting a user to selectively choose a variety of options, such as different floor and wall coverings, and thereby obtain a more complete image of their preferred version of the real estate space.

DEPR:

Shown in schematic throughout the Figures, the present invention is directed towards a system for the display of a three dimensional space, generally 10, and preferably, a real estate display system 10 structured to provide for the remote exhibition of real estate space. Specifically, the real estate space may be any physical space such as a home, apartment, resort, university, cruise ship, office, retail plaza, stadium, arena or any other physical space wherein it would be beneficial for a user to view and/or identify and locate various areas from a single location. Indeed, such a display system 10 is structured to effectuate the display of a real estate space, even before it is built and at any remote location near or far from the actual location of the real estate space, all in a substantially clear, interactive, precise and effective manner.

DEPR:

Further includes as part of the display system 10 is at least one data storage assembly 30. Preferably, the data storage assembly 30 includes a computer readable medium, and in the preferred embodiment of FIG. 1 preferably includes a computer hard drive or other fixed data storage assembly wherein a large quantity of data may be stored and contained. As will be described in further detail subsequently, however, the data storage assembly may also include portable and/or interchangeable assemblies such as compact discs or other such writable and non-writable assemblies and the accompanying drives. Preferably, the data storage assembly 30 is structured to store a substantial quantity of data corresponding a plurality of the three dimensional images which the display assembly 20 is capable of visually displaying thereon. Furthermore, those three dimensional images associated with that quantity of data are preferably also associated with the real estate space to be exhibited by the display system 10. Along these lines, it is noted that a variety of different real estate spaces may be visually exhibited by the same display system 10, however, for purposes of clarity, the following discussion will focus on a display system including only a single real

DEPR:

In order to at least partially input the quantity of data corresponding the plurality of three dimensional images of the real estate space into the data storage assembly 30, the display system further includes a data entry assembly. Indeed, the data entry assembly can take on any of a number of conventional configurations such as a computer keyboard 42, a down-loadable computer readable medium 36, such as a compact disk or tape, and indeed may include a transmitter/receiver type connection 60 wherein data is down-loaded utilizing the data entry assembly into the data storage assembly 30 from a remote site.

DEPR:

Looking first to the overlay processor, it is structured to generate a floor plan display of the three dimensional space utilizing the quantity of data stored in

the data storage assembly 30. The floor plan display will preferably be a conventional map-type display of a specific real estate space, thereby substantially easily providing a user with an overall perspective of their viewing location relative to other locations of the real estate space being displayed. Conversely, the direct view processor is structured to generate a three dimensional, walk-through display of the three dimensional space utilizing the quantity of data that corresponds the three dimensional images. Specifically, the direct view processor incorporates a series of three dimensional images and provides for continuous updating and modification and seamless transitions from a particular portion of the three dimensional display to other portions of the three dimensional display. Such a direct view processor typically incorporates a three dimensional, graphic image build engine, such as that which may be utilized in some of the more modern three dimensional gaming technology, with the added enhancements of inter-activity with the floor plan display and various other informational and accessory items as will be subsequently described.

DEPR:

In order to effectuate movement through the depicted real estate space, the display system 10 of the present invention further includes a reference beacon. The referenced beacon may be a computer generated character or condition, and is specifically structured to be recognized by the processor assembly 25 in order to direct the processor assembly 25 to generate and display a specific, selection portion of a selected one of the displays to be shown on the display assembly 20. For example, in the three dimensional display, the reference beacon is preferably not visible and provides a first person perspective that is structured to control the portion of the display being shown on the display assembly 20 to correspond a specific spacial position and spacial attitude thereof. In other words, the reference beacon enables a user to specifically select where they are "looking" and to accordingly modify the portion of the display being generated by the processor assembly 25 and displayed on the display assembly 20 to correspond that portion. In the case of the floor plan display, it is noted that the reference beacon is preferably visible as a generated character on the display assembly 20 and may provide some sort of directional indication, such as an arrow or the like, to indicate specifically the spacial position and horizontal spacial attitude thereof. Moreover, in this regard, as it is preferred that the entire floor plan display be viewed at one time so as to provide an overall view of the real estate space, it is also noted that for larger real estate spaces only portions thereof may be shown at one time, those portions also corresponding and being directed by the reference beacon.

DEPR:

Similarly, the display system 10 includes a position control assembly. The position control assembly is structured to selective change the spacial position of the reference beacon relative to the portion of the display being generated by the processor assembly 25 and being displayed on the display assembly 20. In this regard, the position control assembly generally controls movement through the display and may include specific directional controls so as to provide for movement in any select direction, or may merely provide for forward or reverse movement corresponding the spacial attitude of the reference beacon. From the foregoing, however, it is noted that the processor assembly 25 is specifically structured to substantially continuously modify the portion of the display being generated thereby and being displayed on the display assembly 20 to correspond even small changes in the spacial position and the spacial attitude of the reference beacon, which are being dictated through the attitude control assembly and position control assembly by a user. As a result, a user is able to effectively "move" through the displayed real estate space, can look at any specific location as desired, and is not limited merely to static and select displays and vantage points "scrolling" by. Indeed, if desired, the processor assembly 25 may be specifically structured to provide one or more elevated or modified room displays of a particular room of the real estate space being displayed if the user desires an alternative look or an elevated complete room perspective rather than the first person perspective which is preferably displayed and generated by the direct view processor assembly. Moreover, it is also noted that so as to facilitate interchangeability between the floor plan display and the three dimensional display, the processor assembly 25 is further structured to correlate the spacial position of the reference beacon in the three dimensional display with the spacial position of the reference beacon in the floor plan display, thereby always ensuring that the precise spacial position and attitude is maintained whether or not the display is switched between the varying

displays to be shown on a display assembly 20 and no matter what portion of the real estate space is being shown.

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The processor assembly 25 of the display system 10 of the present invention, and especially the direct view processor, is also preferably structured to selectively generate and display three dimensional furnishing depictions and other fixture type items in preferred and/or modifiable locations of the depicted real estate space. For example, in the case of an interior real estate space being shown for prospective purchase, it may be beneficial to illustrate to a user what the specific real estate space looks like empty and/or to incorporate one or more select furnishing depictions to provide an idea of upgrades or a complete look. In this regard, the display system 10 of the present invention is preferably structured to selectively display those furnishing depictions, thereby allowing a user complete choices as to specific preferences. Moreover, if desired, specific dimensions of rooms or particular areas can be indicated, either when the furnishing depictions are not being displayed, or at all times in the floor plan display, depending on the particular needs of a user. Further, it is noted that the processor assembly 25 in addition to displaying the three dimensional furnishing depictions in association with a particular portion of the three dimensional display being generated and shown on a display assembly, also functions to maintain those furnishings and depictions in a fixed relative position upon the continuous modification of the portion of the display being generated by the processor assembly 25 and shown as a result of movement of the reference beacon. In this regard, the furnishing depictions are also substantially three-dimensional depictions as a reference perspective to those furnishing depictions will also be modified when a new portion of the display is generated and shown on the display assembly 20 in accordance with movements of the reference beacon. Also, if desired, the furnishing depictions may also include a variety of different types and styles of floor coverings (i.e. tile, wood floors, carpet, etc.) and wall coverings (i.e. wall paper, paint, curtains, blinds, etc.) in one or more select colors and patterns. This will allow a user to truly tailor the look to their needs or preferences.

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As yet another feature of the present invention, the direct view processor assembly is also preferably structured to render window view images associated with the portion of the three dimensional display being generated by the processor assembly 25 and being displayed on the display assembly 20. Indeed, as a particular interior real estate space is being shown, windows, such as conventional windows or sliding glass doors, or even balcony areas have exterior views associated therewith. The processor assembly 25 of the present invention is structured to render and indicate those exterior views associated with that portion of the display being shown, and to correspondingly change the appearance of the exterior view in accordance with changes in perspective, as dictated by movement of the reference beacon and depiction of a new portion of the display on the display assembly 20. Along these lines, and especially for multi-story real estate spaces, the processor assembly 25 is preferably structured to selectively modify the window view image to correspond a selected elevation or location of the three dimensional space. As such, a person viewing, for example, a condominium, is able to effectively view a particular real estate space and the expected views to be achieved therefrom depending upon a particular location of that area within the overall real estate space, such as at higher or lower elevations or facing north, south, east or west.

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Upon the generation and display of the window view areas, but also in a variety of other different circumstances, the display system 10 of the present invention further includes at least one actuatable control assembly structured to permit the selective actuation of at least one selectively available interface link. In the preferred embodiment, the selectively available interface link includes both a video link which can control a video play-back assembly and an audio link structured to control an audio play-back assembly. As indicated, these interface links are preferably always selectively available and are preferably structured to become available only when a particular portion of the display being generated by the processor assembly 25 corresponds with and/or calls for a particular interface link. Indeed, along these lines, the selectively available interface link may include an icon, audio-signal or other indicator that such a link is available, with the actuatable control assembly including any of a variety of

indicators, such as a voice control, a keyboard 42 or mouse 40 command, or any similar type of indication to initiate operation of the interface link. In the case of the video link, the video play-back assembly may include a separate assembly such as video tape player, video signal receiver or other medium, however, it is preferred that the video playback assembly include the computer and indeed the processor assembly 25 itself such that the video images can be shown directly on the display assembly 20 when it becomes available. As such, as a user moves through a specific real estate space and certain added information may be available, such as through real time video, a user can be prompted to actuate the specific available interface link and view the video image which is stored on the data storage assembly. Likewise, in the case of the audio link, preferably the audio signal is also contained in the data-storage assembly and the audio play-back assembly includes the processor assembly 25 of the display system such that those audio signals may be audibly transmitted through a connected speaker 22. Along these lines, it is often noted that both the video link and audio link may be combined to provide or the video link may itself include a video image having both video and audio at a particular link site. Also, continuous background music, or a narrative and/or automatically triggered audio signal may be provided throughout a display, as desired by a user.

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From the foregoing, it is noted that an individual is able to effectively navigate a specific real estate space in an effective, interactive manner which can give the user a substantially close approximation to actual passage through a particular real estate space. Such passage further, is completely interactive and is not limited by the conventions of an ordinary video display, but truly provides an accurate and preferably first person view.

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continuous and substantially seamless maneuvering it provides through various visual images. As such, a user is able to access a "web site" associated with a particular real estate space, and can view the real estate space as desired.